Executive Summary

In 2012, 96% of 15-year-old students in OECD countries reported that they have a computer at home, but only 72% reported that they use a desktop, laptop or tablet computer at school. Only 42% of students in Korea and 38% of students in Shanghai-China reported that they use computers at school – and Korea and Shanghai-China were among the top performers in the digital reading and computer-based mathematics tests in the OECD Programme for International Student Assessment (PISA) in 2012. By contrast, in countries where it is more common for students to use the Internet at school for schoolwork, students' performance in reading declined between 2000 and 2012, on average.

These findings, based on an analysis of PISA data, tell us that, despite the pervasiveness of information and communication technologies (ICT) in our daily lives, these technologies have not yet been as widely adopted in formal education. But where they *are* used in the classroom, their impact on student performance is mixed, at best. In fact, PISA results show no appreciable improvements in student achievement in reading, mathematics or science in the countries that had invested heavily in ICT for education.

As these results show, the connections among students, computers and learning are neither simple nor hard-wired; and the real contributions ICT can make to teaching and learning have yet to be fully realised and exploited. But as long as computers and the Internet continue to have a central role in our personal and professional lives, students who have not acquired basic skills in reading, writing and navigating through a digital landscape will find themselves unable to participate fully in the economic, social and cultural life around them. Amidst the decidedly mixed messages that are drawn from the PISA data, a few critical observations emerge.

The foundation skills required in a digital environment can and should be taught.

Reading on line requires the same skills as reading a printed page – with the important addition of being able to navigate through and among pages/screens of text, and filtering the relevant and trustworthy sources from among a large amount of information. Korea and Singapore, the two highest-performing countries in digital reading, and among those countries whose students are the most proficient in navigating through the web, have excellent broadband infrastructure,

and their 15-year-old students use computers with ease in their daily lives. Yet students in these countries are not more exposed to the Internet at school than are students in other OECD countries. This suggests that many of the evaluation and task-management skills that are essential for online navigation may also be taught and learned with conventional, analogue pedagogies and tools.

Improve equity in education first.

In most countries, differences in computer access between advantaged and disadvantaged students shrank between 2009 and 2012; in no country did the gap widen. But results from the PISA computer-based tests show that once the so-called "first digital divide" (access to computers) is bridged, the remaining difference, between socio-economic groups, in the ability to use ICT tools for learning is largely, if not entirely, explained by the difference observed in more traditional academic abilities. So to reduce inequalities in the ability to benefit from digital tools, countries need to improve equity in education first. Ensuring that every child attains a baseline level of proficiency in reading and mathematics will do more to create equal opportunities in a digital world than can be achieved by expanding or subsidising access to high-tech devices and services.

Teachers, parents and students should be alerted to the possible harmful aspects of Internet use.

Those in charge of educating today's "connected" learners are confronted with a number of new (or newly relevant) issues, from information overload to plagiarism, from protecting children from online risks (fraud, violations of privacy, online bullying) to setting an adequate and appropriate media diet. In addition, many parents and teachers will not be surprised by the PISA finding that students who spend more than six hours on line per weekday outside of school are particularly at risk of reporting that they feel lonely at school, and that they arrived late for school or skipped days of school in the two weeks prior to the PISA test.

Schools can educate students to become critical consumers of Internet services and electronic media, helping them to make informed choices and avoid harmful behaviours. They can also raise awareness in families about the risks that children face on line and how to avoid them. Parents can help children to balance the use of ICT for entertainment and leisure with time for other recreational activities that do not involve screens, such as sports and, equally important, sleep.

To improve the effectiveness of investments in technology, learn from experience.

PISA data show that, in countries where mathematics lessons focus on formulating, and solving, real-world problems – whether in engineering, biology, finance or any problem that arises in everyday life and work – students reported that their teachers use computers to a greater extent in instruction. And among all teachers, those who are more inclined and better prepared for student-oriented teaching practices, such as group work, individualised learning, and project work, are more likely to use digital resources, according to students.

But while PISA results suggest that limited use of computers at school may be better than not using computers at all, using them more intensively than the current OECD average tends to be associated with significantly poorer student performance. ICT is linked to better student performance only in certain contexts, such as when computer software and Internet connections help to increase study time and practice.

One interpretation of these findings is that it takes educators time and effort to learn how to use technology in education while staying firmly focused on student learning. Meanwhile, online tools can help teachers and school leaders exchange ideas and inspire each other, transforming what used to be an individual's problem into a collaborative process. In the end, technology can amplify great teaching, but great technology cannot replace poor teaching.

■ Table 0.1 [Part 1/2] ■
SNAPSHOT OF HOME ICT EQUIPMENT AND INTERNET USE

Countries/economies where home ICT equipment/time spent using the Internet is **above** the OECD average
Countries/economies where home ICT equipment/time spent using the Internet is not statistically different from the OECD average
Countries/economies where home ICT equipment/time spent using the Internet is **below** the OECD average

	Home ICT equipment				Time spent using the Internet			
	Students with at least one computer at home		Students with three or more computers at home		Average daily time spent using the Internet (lower bound)			Students who reported using the Internet outside of school for more than 6 hours during a typical weekday
	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	Outside of school, on weekdays	Outside of school, on weekend days	At school, on weekdays	
	%	% dif.	%	% dif.	Minutes	Minutes	Minutes	%
OECD average	95.8	**2.0**	42.8	**12.1**	104	138	25	7.2
Denmark	99.9	**0.2**	84.7	**9.9**	136	177	46	9.4
Netherlands	99.8	0.0	69.0	**10.0**	115	152	26	9.9
Finland	99.8	**0.3**	56.1	**17.2**	99	130	18	4.1
Slovenia	99.7	**0.5**	43.4	**15.9**	108	138	28	8.4
Sweden	99.6	**0.5**	74.8	**18.1**	144	176	39	13.2
Liechtenstein	99.6	-0.1	62.0	**20.7**	95	132	18	4.9
Hong Kong-China	99.6	**0.5**	31.8	**12.1**	111	164	11	7.0
Austria	99.5	**0.7**	45.3	**12.0**	96	119	29	6.6
Switzerland	99.5	**0.5**	58.9	**15.6**	88	121	16	4.6
Germany	99.4	**0.5**	54.0	**10.2**	114	144	14	8.6
Macao-China	99.4	**0.4**	25.4	**13.7**	112	178	14	7.0
Iceland	99.3	-0.2	70.7	**10.7**	124	160	20	7.7
Norway	99.1	-0.3	83.9	**12.1**	136	170	24	9.3
Luxembourg	99.1	0.2	56.6	**11.3**	m	m	m	m
Australia	99.0	0.2	64.6	**18.7**	130	158	58	9.9
France	99.0	**2.2**	45.0	**17.4**	m	m	m	m
Canada	98.9	0.3	53.0	**15.5**	m	m	m	m
Belgium	98.9	**0.5**	55.0	**14.7**	94	142	22	5.5
United Kingdom	98.8	-0.2	50.9	**10.2**	m	m	m	m
Italy	98.7	**2.0**	27.7	**12.7**	93	97	19	5.7
Ireland	98.7	**1.6**	36.0	**15.2**	74	100	16	3.4
Korea	98.6	-0.3	10.1	**3.4**	41	94	9	0.6
Estonia	98.5	**0.9**	37.3	**15.3**	138	170	23	9.0
Czech Republic	98.1	**1.0**	36.9	**17.0**	122	155	18	9.0
Spain	97.9	**6.7**	37.9	**17.1**	107	149	34	8.1
Chinese Taipei	97.7	**1.3**	30.0	**10.3**	74	153	23	5.8
United Arab Emirates	97.7	**14.3**	54.1	**16.4**	m	m	m	m
Poland	97.7	**3.1**	22.9	**12.2**	117	157	13	7.5
Croatia	97.5	**1.9**	16.2	**5.9**	103	143	23	7.4
Portugal	97.1	**-0.9**	36.6	**5.2**	99	149	24	6.1
Singapore	96.9	-0.1	47.9	**12.0**	102	152	20	7.6
New Zealand	96.8	0.5	41.6	**12.7**	98	125	25	6.2
Lithuania	96.6	**2.9**	16.3	**9.8**	m	m	m	m
Israel	96.5	**1.7**	44.6	**20.0**	106	133	25	8.9
Qatar	96.3	**-0.9**	59.7	**6.2**	m	m	m	m
Hungary	96.2	**2.3**	24.2	**8.7**	112	156	30	8.0
Serbia	95.7	**6.2**	10.7	**6.4**	110	136	20	9.9
Greece	94.6	**4.7**	18.4	**8.5**	108	139	42	9.4

Note: Countries/economies in which differences between 2009 and 2012 are statistically significant are marked in bold.
Countries and economies are ranked in descending order of the percentage of students with at least one computer at home in 2012.
Source: OECD, PISA 2012 Database, Tables 1.1 and 1.5a, b and c.
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■ Table 0.1 [Part 2/2] ■
SNAPSHOT OF HOME ICT EQUIPMENT AND INTERNET USE

Countries/economies where home ICT equipment/time spent using the Internet is **above** the OECD average
Countries/economies where home ICT equipment/time spent using the Internet is not statistically different from the OECD average
Countries/economies where home ICT equipment/time spent using the Internet is **below** the OECD average

	Home ICT equipment				Time spent using the Internet			
	Students with at least one computer at home		Students with three or more computers at home		Average daily time spent using the Internet (lower bound)			Students who reported using the Internet outside of school for more than 6 hours during a typical weekday
	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	Outside of school, on weekdays	Outside of school, on weekend days	At school, on weekdays	
	%	% dif.	%	% dif.	Minutes	Minutes	Minutes	%
OECD average	95.8	**2.0**	42.8	**12.1**	104	138	25	7.2
United States	94.5	1.1	37.6	**7.2**	m	m	m	m
Latvia	94.5	**3.5**	19.9	**11.1**	117	147	17	7.6
Slovak Republic	94.4	**4.1**	26.4	**15.7**	116	152	32	8.1
Bulgaria	93.5	**6.3**	17.0	**10.0**	m	m	m	m
Montenegro	93.3	**8.0**	10.1	**5.8**	m	m	m	m
Russian Federation	92.8	**13.0**	10.5	**7.7**	130	161	34	13.7
Japan	92.4	**3.7**	17.1	**2.9**	70	111	13	4.5
Shanghai-China	91.9	**10.2**	17.6	**10.5**	39	106	10	2.2
Uruguay	89.6	**12.3**	20.4	**12.6**	118	144	30	11.0
Chile	88.3	**12.2**	20.9	**12.0**	106	148	30	9.3
Romania	87.1	**2.7**	8.7	**4.7**	m	m	m	m
Jordan	86.5	**11.9**	13.0	**7.2**	69	110	23	6.4
Argentina	83.3	**16.4**	18.7	**11.9**	m	m	m	m
Costa Rica	75.0	**11.3**	13.2	**5.7**	91	113	29	6.6
Malaysia	74.0	**10.6**	13.9	**4.9**	m	m	m	m
Brazil	73.5	**20.2**	9.4	**6.2**	m	m	m	m
Turkey	70.7	**9.4**	4.1	**2.4**	52	78	15	2.5
Kazakhstan	68.1	**14.8**	2.4	**1.6**	m	m	m	m
Thailand	65.6	**10.1**	6.1	**1.7**	m	m	m	m
Albania	65.4	**16.2**	3.5	**1.6**	m	m	m	m
Colombia	62.9	**15.2**	5.2	**2.9**	m	m	m	m
Tunisia	59.6	**14.3**	5.2	**3.4**	m	m	m	m
Mexico	58.5	**8.9**	9.1	**4.3**	80	91	26	5.3
Peru	52.8	**14.6**	6.2	**2.5**	m	m	m	m
Viet Nam	38.9	m	2.0	m	m	m	m	m
Indonesia	25.8	4.7	1.9	1.1	m	m	m	m

Note: Countries/economies in which differences between 2009 and 2012 are statistically significant are marked in bold.
Countries and economies are ranked in descending order of the percentage of students with at least one computer at home in 2012.
Source: OECD, PISA 2012 Database, Tables 1.1 and 1.5a, b and c.
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■ Table 0.2 [Part 1/2] ■
SNAPSHOT OF ICT EQUIPMENT AND USE AT SCHOOL

Countries/economies where the number of students per school computer is **below** the OECD average/ICT use is **above** the OECD average
Countries/economies where the number of students per school computer/ICT use is not statistically different from the OECD average
Countries/economies where the number of students per school computer is **above** the OECD average/ICT use is **below** the OECD average

	Number of students per school computer	ICT use at and for school						
		Students using computers at school		Students browsing the Internet for schoolwork at least once a week				Students who reported the use of computers in mathematics lessons during the month prior to the PISA test
				At school		Outside of school		
	2012	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	2012
	Mean	%	% dif.	%	% dif.	%	% dif.	%
OECD average	4.7	72.0	**1.3**	41.9	**3.4**	54.9	**9.5**	31.6
Australia	0.9	93.7	**2.1**	80.8	**15.8**	75.6	**7.8**	40.0
New Zealand	1.2	86.4	**3.0**	59.3	**9.1**	66.1	**14.5**	28.6
Macao-China	1.3	87.6	**7.5**	26.7	1.5	44.2	**12.9**	34.0
United Kingdom	1.4	m	m	m	m	m	m	m
Czech Republic	1.6	83.2	**4.1**	47.6	**9.8**	61.6	**15.8**	25.6
Norway	1.7	91.9	-1.1	69.0	-0.2	68.8	**5.4**	73.1
United States	1.8	m	m	m	m	m	m	m
Lithuania	1.9	m	m	m	m	m	m	m
Slovak Republic	2.0	80.2	0.9	43.1	0.0	50.3	**11.1**	33.3
Singapore	2.0	69.9	**7.2**	30.4	**4.5**	56.0	**12.8**	34.4
Liechtenstein	2.1	91.8	0.9	41.3	**-14.5**	43.9	**10.1**	37.9
Estonia	2.1	61.0	**5.2**	28.9	**7.3**	64.0	**13.7**	39.2
Hong Kong-China	2.2	83.8	1.1	22.7	**-5.5**	50.3	**6.2**	16.8
Spain	2.2	73.2	**7.7**	51.1	**8.5**	61.9	**13.7**	29.4
Luxembourg	2.2	m	m	m	m	m	m	m
Hungary	2.2	74.7	**5.3**	35.7	**-4.7**	52.7	2.4	25.9
Latvia	2.2	52.4	**5.1**	23.1	**5.9**	54.4	**13.6**	30.8
Denmark	2.4	86.7	**-6.3**	80.8	**6.6**	74.3	**13.2**	58.3
Kazakhstan	2.5	m	m	m	m	m	m	m
Ireland	2.6	63.5	0.6	32.4	**6.4**	45.4	**16.7**	17.6
Bulgaria	2.6	m	m	m	m	m	m	m
Netherlands	2.6	94.0	**-2.6**	67.5	0.2	65.8	**12.7**	20.2
Switzerland	2.7	78.3	2.6	32.5	**-2.9**	46.0	**8.6**	29.6
Belgium	2.8	65.3	**2.5**	29.4	**12.6**	57.1	**14.0**	25.6
Canada	2.8	m	m	m	m	m	m	m
France	2.9	m	m	m	m	m	m	m
Shanghai-China	2.9	38.3	m	9.7	m	38.5	m	8.6
Austria	2.9	81.4	-2.7	48.0	2.8	53.0	**10.5**	38.3
Russian Federation	3.0	80.2	**7.9**	20.3	**3.5**	62.9	**29.4**	52.6
Thailand	3.1	m	m	m	m	m	m	m
Finland	3.1	89.0	1.6	34.9	**4.2**	28.3	**10.5**	19.1
Slovenia	3.3	57.2	-1.0	41.6	**7.3**	58.8	**14.6**	29.6
Japan	3.6	59.2	0.0	11.3	-1.6	16.5	**7.7**	23.8
Colombia	3.7	m	m	m	m	m	m	m
Sweden	3.7	87.0	-2.1	66.6	**6.3**	58.5	**11.2**	20.0
Portugal	3.7	69.0	**13.8**	38.1	-2.2	67.4	**6.9**	28.8
Poland	4.0	60.3	-0.3	30.3	**3.6**	66.4	**10.0**	23.3
Iceland	4.1	81.9	**2.4**	28.9	**-9.0**	35.8	**4.5**	33.5

Note: Countries/economies in which differences between 2009 and 2012 are statistically significant are marked in bold.
Countries and economies are ranked in ascending order of the number of students per school computer in 2012.
Source: OECD, PISA 2012 Database, Tables 2.1, 2.3, 2.5, 2.7 and 2.11.
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■ Table 0.2 [Part 2/2] ■
SNAPSHOT OF ICT EQUIPMENT AND USE AT SCHOOL

Countries/economies where the number of students per school computer is **below** the OECD average/ICT use is **above** the OECD average
Countries/economies where the number of students per school computer/ICT use is not statistically different from the OECD average
Countries/economies where the number of students per school computer is **above** the OECD average/ICT use is **below** the OECD average

	Number of students per school computer	ICT use at and for school						
		Students using computers at school		Students browsing the Internet for schoolwork at least once a week				Students who reported the use of computers in mathematics lessons during the month prior to the PISA test
				At school		Outside of school		
	2012	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	2012	Change between 2009 and 2012	2012
	Mean	%	% dif.	%	% dif.	%	% dif.	%
OECD average	4.7	72.0	**1.3**	41.9	**3.4**	54.9	**9.5**	31.6
Italy	4.1	66.8	**3.0**	28.8	1.3	49.1	**3.6**	40.4
Qatar	4.2	m	m	m	m	m	m	m
United Arab Emirates	4.2	m	m	m	m	m	m	m
Germany	4.2	68.7	**4.1**	28.9	2.3	51.3	**11.5**	26.9
Romania	4.6	m	m	m	m	m	m	m
Israel	4.7	55.2	4.0	30.6	**3.3**	49.0	**6.4**	30.7
Chile	4.7	61.7	**4.9**	44.5	0.3	64.7	**17.7**	28.3
Jordan	5.0	79.7	**5.7**	32.6	2.0	42.7	**14.7**	69.6
Croatia	5.0	78.3	**10.3**	31.4	**3.4**	59.2	**18.9**	23.7
Korea	5.3	41.9	**-20.9**	11.0	**-2.6**	31.3	**-10.6**	9.8
Chinese Taipei	5.8	78.8	m	28.6	m	25.9	m	9.3
Montenegro	7.7	m	m	m	m	m	m	m
Peru	7.9	m	m	m	m	m	m	m
Greece	8.2	65.9	**8.0**	44.9	**9.7**	54.4	**13.7**	33.3
Viet Nam	8.6	m	m	m	m	m	m	m
Uruguay	8.7	49.9	2.2	40.0	**11.2**	73.2	**19.6**	39.4
Serbia	8.8	82.0	**10.7**	24.9	**7.0**	48.7	**21.3**	33.4
Albania	8.9	m	m	m	m	m	m	m
Argentina	14.1	m	m	m	m	m	m	m
Mexico	15.5	60.6	m	39.5	m	67.0	m	41.4
Indonesia	16.4	m	m	m	m	m	m	m
Malaysia	16.7	m	m	m	m	m	m	m
Costa Rica	17.7	57.4	m	38.3	m	64.8	m	25.6
Brazil	22.1	m	m	m	m	m	m	m
Turkey	44.9	48.7	-2.1	28.0	0.0	50.2	-1.9	41.7
Tunisia	53.1	m	m	m	m	m	m	m

Note: Countries/economies in which differences between 2009 and 2012 are statistically significant are marked in bold.
Countries and economies are ranked in ascending order of the number of students per school computer in 2012.
Source: OECD, PISA 2012 Database, Tables 2.1, 2.3, 2.5, 2.7 and 2.11.
StatLink http://dx.doi.org/10.1787/888933253441

■ Table 0.3 ■
SNAPSHOT OF PERFORMANCE IN COMPUTER-BASED ASSESSMENTS

Countries/economies with performance **above** the OECD average
Countries/economies with performance not statistically different from the OECD average
Countries/economies with performance **below** the OECD average

	Performance in digital reading			Performance in computer-based mathematics		
	Mean score in PISA 2012	Change between 2009 and 2012	Relative performance in digital reading, compared with students around the world with similar performance in print reading	Mean score in PISA 2012	Solution rate on tasks that do not require the use of computers to solve problems	Solution rate on tasks that require the use of computers to solve problems
	Mean score	Score dif.	Score dif.	Mean score	% correct	% correct
OECD average	497	1	-5	497	38.1	26.6
Singapore	567	m	32	566	55.2	41.8
Korea	555	**-12**	24	553	50.2	37.8
Hong Kong-China	550	**35**	12	550	49.7	36.6
Japan	545	**26**	13	539	47.8	36.5
Canada	532	m	11	523	42.4	32.4
Shanghai-China	531	m	-26	562	52.5	39.6
Estonia	523	m	7	516	42.2	29.0
Australia	521	**-16**	9	508	41.0	29.8
Ireland	520	**11**	-1	493	37.9	24.6
Chinese Taipei	519	m	-2	537	46.8	35.2
Macao-China	515	**23**	5	543	45.9	34.7
United States	511	m	10	498	36.9	27.2
France	511	**17**	4	508	42.3	26.9
Italy	504	m	11	499	38.0	25.2
Belgium	502	-5	-7	512	41.9	28.6
Norway	500	0	-6	498	38.6	27.0
Sweden	498	**-12**	9	490	36.8	24.7
Denmark	495	6	-5	496	38.6	26.0
Portugal	486	m	-7	489	35.5	25.2
Austria	480	m	-15	507	38.5	27.9
Poland	477	**13**	-40	489	37.3	24.2
Slovak Republic	474	m	1	497	36.0	25.8
Slovenia	471	m	-17	487	34.0	24.3
Spain	466	-9	-25	475	33.3	21.5
Russian Federation	466	m	-17	489	34.8	24.9
Israel	461	m	-31	447	29.5	20.2
Chile	452	**18**	-4	432	26.0	15.5
Hungary	450	**-18**	-43	470	31.3	21.1
Brazil	436	m	3	421	23.6	16.2
United Arab Emirates	407	m	-50	434	25.2	18.1
Colombia	396	**27**	-30	397	19.1	11.5

Note: Countries/economies in which differences between 2009 and 2012 are statistically significant are marked in bold.
Countries and economies are ranked in descending order of mean performance in digital reading in 2012.
Source: OECD, PISA 2012 Database, Tables 3.2, 3.6, 3.8 and 3.11.
StatLink http://dx.doi.org/10.1787/888933253454

■ Table 0.4 ■
SNAPSHOT OF STUDENT NAVIGATION IN DIGITAL READING

Countries/economies with performance/navigation **above** the OECD average
Countries/economies with performance/navigation not statistically different from the OECD average
Countries/economies with performance/navigation **below** the OECD average

	Performance in digital reading	Navigation in digital reading[1]	
		Overall browsing activity	Task-oriented browsing
	Mean score	Mean percentile rank	Mean percentile rank
OECD average	497	48	50
Singapore	567	68	64
Korea	555	77	58
Hong Kong-China	550	72	55
Japan	545	65	53
Canada	532	51	57
Shanghai-China	531	76	49
Estonia	523	54	49
Australia	521	48	58
Ireland	520	50	56
Chinese Taipei	519	76	48
Macao-China	515	76	49
United States	511	51	57
France	511	51	54
Italy	504	56	49
Belgium	502	46	50
Norway	500	43	49
Sweden	498	43	50
Denmark	495	47	50
Portugal	486	45	50
Austria	480	46	48
Poland	477	41	47
Slovak Republic	474	44	41
Slovenia	471	39	46
Spain	466	42	43
Russian Federation	466	44	40
Israel	461	39	46
Chile	452	40	42
Hungary	450	35	41
Brazil	436	28	37
United Arab Emirates	407	32	37
Colombia	396	29	33

1. To describe the navigation behaviour of students in the digital reading test, students' complete browsing sequences were divided into elementary sequences ("steps"), with an origin and a destination page. Two indices were derived from step counts.

A first index measures the quantity of navigation steps. To make this comparable across students who took different test forms, the *index of overall browsing activity* is computed as a percentile rank on the distribution of all students who were administered the same questions. A student with a value of, say, 73 on this index can be said to have browsed more pages than 73% of the students who took his or her same test form.

A second index relates to the quality of navigation steps. Not all pages available for browsing in the digital reading tests led students to information that was helpful or necessary for the specific task given to them. The *index of task-oriented browsing* measures how well students' navigation sequences conform to expectations, given the demands of the task. High values on this index correspond to long navigation sequences that contain a high number of task-relevant steps (steps from a relevant page to another relevant page) and few or no missteps or task-irrelevant steps (steps leading to non-relevant pages).

Countries and economies are ranked in descending order of mean performance in digital reading.
Source: OECD, PISA 2012 Database, Tables 3.2 and 4.1.
StatLink http://dx.doi.org/10.1787/888933253464

■ Table 0.5 [Part 1/2] ■
SNAPSHOT OF SOCIO-ECONOMIC DIFFERENCES IN ICT ACCESS AND USE

Countries/economies where Internet access/time spent using the Internet/use of computers is **above** the OECD average among disadvantaged students

Countries/economies where Internet access/time spent using the Internet/use of computers is not statistically different from the OECD average among disadvantaged students

Countries/economies where Internet access/time spent using the Internet/use of computers is **below** the OECD average among disadvantaged students

	Internet access		**Time spent using the Internet**		**Use of computers**			
	Students with a link to the Internet at home		Average daily time spent using the Internet, outside of school, during weekend days (lower bound)		**Students using computers outside of school at least once a week to…**			
					…obtain practical information from the Internet		… play one-player games	
	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students
	%	% dif.	Minutes	Minutes	%	% dif.	%	% dif.
OECD average	85.2	**13.4**	124	**7**	55.6	**18.6**	39.4	0.5
Denmark	99.3	**0.7**	154	0	67.3	**19.1**	36.0	-1.6
Iceland	99.1	**0.9**	160	**-18**	70.8	**11.1**	39.1	-3.1
Finland	98.8	**1.1**	109	-6	65.2	**9.1**	49.5	-3.8
Hong Kong-China	98.7	**0.9**	171	**-34**	53.5	**21.1**	36.1	2.1
Netherlands	98.6	**1.3**	148	-3	49.0	**18.4**	41.3	3.3
Norway	98.6	**1.3**	169	**-14**	71.3	**11.5**	44.0	-0.5
Switzerland	98.1	**1.5**	128	**-18**	61.3	**15.0**	27.9	-2.2
Sweden	98.1	**1.9**	170	-10	63.0	**12.6**	37.5	0.4
Slovenia	97.6	**2.1**	136	-7	61.0	**16.5**	50.8	**-8.8**
Estonia	97.4	**2.4**	167	-1	73.6	**12.3**	40.2	-0.5
Austria	97.1	**2.6**	120	-8	56.3	**18.0**	33.7	-1.6
United Kingdom	96.7	**3.2**	m	m	m	m	m	m
Germany	96.7	**3.2**	143	**-17**	57.6	**14.6**	33.4	-3.1
Macao-China	96.6	**2.5**	175	-5	54.0	**16.9**	40.2	2.2
Liechtenstein	95.8	4.2	132	-13	59.1	**26.4**	37.6	-2.2
France	95.6	**4.1**	m	m	m	m	m	m
Luxembourg	95.4	**4.2**	m	m	m	m	m	m
Belgium	95.3	**4.6**	130	**-11**	53.9	**14.9**	40.1	**-4.2**
Ireland	94.8	**4.6**	100	-5	41.9	**18.5**	37.3	**-5.3**
Canada	94.8	**5.0**	m	m	m	m	m	m
Korea	94.0	**5.7**	101	**-18**	43.1	**11.9**	30.9	-2.0
Australia	93.1	**6.6**	152	1	54.0	**22.2**	46.0	**-5.3**
Italy	92.9	**6.3**	94	**-7**	66.2	**13.1**	42.0	-2.1
Czech Republic	92.7	**7.0**	143	6	70.3	**16.4**	46.0	2.0
Singapore	91.8	**7.9**	150	0	56.7	**21.3**	35.7	0.3
Chinese Taipei	90.6	**8.6**	168	**-42**	49.0	**14.1**	40.4	-3.0
Croatia	89.2	**9.8**	135	4	57.9	**17.4**	45.7	3.8
Portugal	87.9	**11.5**	127	**16**	53.2	**23.8**	52.0	-4.2
Spain	85.7	**13.8**	140	3	51.6	**16.2**	29.6	-2.8
Poland	85.6	**14.0**	134	**25**	67.2	**19.0**	46.1	0.3
United Arab Emirates	84.0	**15.7**	m	m	m	m	m	m
Qatar	83.2	**15.6**	m	m	m	m	m	m

Notes: Countries/economies in which differences between advantaged and disadvantaged students are statistically significant are marked in bold.
Advantaged students refers to students in the top quarter of the *PISA index of economic, social and cultural status;* disadvantaged students refers to students in the bottom quarter of that index.
Countries and economies are ranked in descending order of the percentage of disadvantaged students with a link to the Internet at home.
Source: OECD, PISA 2012 Database, Tables 5.1a, 5.11 and 5.12.
StatLink http://dx.doi.org/10.1787/888933253475

■ Table 0.5 [Part 2/2] ■
SNAPSHOT OF SOCIO-ECONOMIC DIFFERENCES IN ICT ACCESS AND USE

Countries/economies where Internet access/time spent using the Internet/use of computers is **above** the OECD average among disadvantaged students

Countries/economies where Internet access/time spent using the Internet/use of computers is not statistically different from the OECD average among disadvantaged students

Countries/economies where Internet access/time spent using the Internet/use of computers is **below** the OECD average among disadvantaged students

	Internet access		**Time spent using the Internet**		**Use of computers**			
	Students with a link to the Internet at home		Average daily time spent using the Internet, outside of school, during weekend days (lower bound)		**Students using computers outside of school at least once a week to…**			
					…obtain practical information from the Internet		… play one-player games	
	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students	Disadvantaged students	Difference between advantaged and disadvantaged students
	%	% dif.	Minutes	Minutes	%	% dif.	%	% dif.
OECD average	85.2	**13.4**	124	**7**	55.6	**18.6**	39.4	0.5
Lithuania	82.5	**16.7**	m	m	m	m	m	m
Israel	80.9	**18.3**	95	**29**	64.4	**13.7**	35.8	**5.2**
Hungary	80.8	**18.5**	137	7	58.6	**19.5**	52.5	-4.4
New Zealand	80.0	**19.6**	114	7	47.6	**26.4**	40.2	-0.4
United States	79.8	**19.9**	m	m	m	m	m	m
Russian Federation	79.5	**19.4**	144	**20**	50.9	**27.3**	42.5	-0.9
Bulgaria	79.0	**20.5**	m	m	m	m	m	m
Latvia	78.4	**20.9**	129	13	61.8	**19.7**	37.5	-0.5
Slovak Republic	76.9	**22.4**	125	**26**	53.6	**24.0**	40.0	3.2
Japan	75.3	**21.9**	109	-8	41.0	**15.9**	48.6	-1.5
Serbia	73.5	**25.5**	116	**23**	45.1	**23.5**	57.1	1.5
Greece	69.2	**28.8**	124	7	53.3	**15.9**	53.5	2.6
Montenegro	68.2	**31.2**	m	m	m	m	m	m
Shanghai-China	62.8	**34.7**	107	**-17**	37.9	**25.9**	29.1	2.2
Uruguay	57.7	**40.8**	85	**69**	45.7	**32.5**	33.5	**12.9**
Romania	52.1	**45.4**	m	m	m	m	m	m
Brazil	44.7	**51.1**	m	m	m	m	m	m
Argentina	44.4	**51.1**	m	m	m	m	m	m
Chile	44.0	**52.2**	95	**77**	35.8	**39.3**	27.0	**14.4**
Costa Rica	30.2	**66.6**	52	**97**	26.6	**40.3**	19.3	**27.6**
Jordan	29.8	**62.2**	54	**84**	34.9	**27.6**	31.4	**16.6**
Malaysia	27.6	**66.5**	m	m	m	m	m	m
Turkey	21.5	**64.2**	43	**58**	33.1	**26.5**	29.2	**18.4**
Kazakhstan	19.4	**65.4**	m	m	m	m	m	m
Colombia	17.4	**68.4**	m	m	m	m	m	m
Tunisia	15.8	**71.2**	m	m	m	m	m	m
Thailand	13.2	**71.4**	m	m	m	m	m	m
Peru	7.4	**71.0**	m	m	m	m	m	m
Mexico	6.0	**80.2**	35	**103**	28.0	**42.7**	11.0	**21.3**
Indonesia	6.0	**50.2**	m	m	m	m	m	m
Viet Nam	2.9	**70.4**	m	m	m	m	m	m

Notes: Countries/economies in which differences between advantaged and disadvantaged students are statistically significant are marked in bold.
Advantaged students refers to students in the top quarter of the *PISA index of economic, social and cultural status;* disadvantaged students refers to students in the bottom quarter of that index.
Countries and economies are ranked in descending order of the percentage of disadvantaged students with a link to the Internet at home.
Source: OECD, PISA 2012 Database, Tables 5.1a, 5.11 and 5.12.
StatLink http://dx.doi.org/10.1787/888933253475

■ Table 0.6 ■
SNAPSHOT OF THE RELATION BETWEEN COMPUTER USE AT SCHOOL AND PERFORMANCE IN COMPUTER-BASED ASSESSMENTS

Countries/economies with performance **above** the OECD average
Countries/economies with performance not statistically different from the OECD average
Countries/economies with performance **below** the OECD average

	Digital reading			Computer-based mathematics		
		Difference in performance, by frequency of browsing the Internet for schoolwork at school, after accounting for the socio-economic status of students and schools			Difference in performance, by use of computers in mathematics lessons, after accounting for the socio-economic status of students and schools	
	Mean score in PISA 2012	"Once or twice a month" minus "never or hardly ever"	"Once a week or more" minus "once or twice a month"	Mean score in PISA 2012	"Students did at least one task" minus "computers were not used"	"Only the teacher demonstrated the use of computers" minus "computers were not used"
	Mean score	Score dif.	Score dif.	Mean score	Score dif.	Score dif.
OECD average	497	**13**	**-8**	497	**-12**	**-6**
Singapore	567	**-6**	**-29**	566	**-27**	**10**
Korea	555	-4	-6	553	-11	-11
Hong Kong-China	550	**8**	**-21**	550	**-31**	-1
Japan	545	**10**	-2	539	**-12**	**-22**
Canada	532	m	m	523	m	m
Shanghai-China	531	**9**	**-19**	562	**-22**	-3
Estonia	523	3	**-23**	516	**-23**	-6
Australia	521	**30**	**11**	508	2	0
Ireland	520	**11**	3	493	**-16**	**10**
Chinese Taipei	519	**13**	-5	537	**-13**	**-15**
Macao-China	515	**6**	4	543	**-20**	4
United States	511	m	m	498	m	m
France	511	m	m	508	m	m
Italy	504	-2	**-13**	499	**-9**	-3
Belgium	502	**15**	**-11**	512	4	**7**
Norway	500	**49**	-2	498	**19**	-3
Sweden	498	**48**	**-13**	490	**-34**	**-18**
Denmark	495	**36**	-3	496	**15**	**-12**
Portugal	486	**-11**	**-15**	489	**-19**	2
Austria	480	**14**	-4	507	-5	**-13**
Poland	477	2	**-23**	489	**-27**	**-19**
Slovak Republic	474	**18**	2	497	**-32**	-9
Slovenia	471	3	**-8**	487	**-13**	**-10**
Spain	466	**12**	8	475	-1	10
Russian Federation	466	**-12**	**-19**	489	**-19**	**-9**
Israel	461	8	**-28**	447	**-37**	-12
Chile	452	4	**-8**	432	**-27**	-5
Hungary	450	3	**-21**	470	**-21**	-7
Brazil	436	m	m	421	m	m
United Arab Emirates	407	m	m	434	m	m
Colombia	396	m	m	397	m	m

Note: Countries/economies in which score differences are statistically significant are marked in bold.
Countries and economies are ranked in descending order of mean performance in digital reading in 2012.
Source: OECD, PISA 2012 Database, Tables 3.1, 3.8, 6.3c and 6.5h.
StatLink http://dx.doi.org/10.1787/888933253481